Patent claims

Fastening for a rail and arrangement for fastening of rails

1. Rail fastening for securing a rail (10, 100, 222, 224, 252) whose foot (18, 154, 258) indirectly or directly rests on a concrete sleeper (16, 104, 148, 226, 260), comprising at least one elastic clip (20, 22, 144, 184, 186) having several legs (28, 30, 32, 34, 36, 38, 40) of which at least one leg extends inside a receptacle such as a shoulder (42, 44, 134, 236, 238, 240, 176, 180, 182) or channel of a holder (24, 26, 142, 170, 232) that is connected to the concrete sleeper, and at least one further leg rests on the rail foot, w h e r e i n the holder (24, 26, 142, 170, 232) is arranged detachably in the concrete sleeper (16, 104, 148, 226, 260) or in a plate element (102, 149) resting thereon and is connected to the concrete sleeper by a bolt element (82, 84, 214).

2. Rail fastening according to Claim 1, w h e r e i n
the holder (24, 26, 142, 170, 232) is arranged in an insert (64, 160, 200) comprising electrically insulating material in the concrete sleeper (16, 104, 148, 226, 260).

3. Rail fastening according to Claim 1 or 2, w h e r e i n
the insert (64, 160, 200) has in a plane running parallel to the surface of the concrete sleeper (16, 104, 148, 226, 260) a cross-section preferably differing from a circular geometry and wherein the holder (24, 26, 142, 170, 232) positively engages in the insert.

4. Rail fastening according to at least one of the preceding claims,
w h e r e i n the holder (24, 26, 142, 170, 232) has a base section (56, 172) with shaped extension (58, 174) on the bottom and positively engaging in the insert (64, 116, 150, 158, 200).

5. Rail fastening according to at least one of the preceding claims,
w h e r e i n the shaped extension (58) has a cylinder disc geometry with a circumferential area from which emanates at least one projection (60, 62) and/or a recess.

6. Rail fastening according to at least one of the preceding claims,
w h e r e i n two shoulders (42, 44) each receiving a leg section (28, 30) of the clip (20, 22) emanate from the base section (56) of the holder (24, 26) and wherein the bolt element such as through-bolt (82, 84) passes between the shoulders, where the head (92, 94) of the bolt element is underneath the clip or its section resting on the

rail foot (18, 154, 228, 230, 258) when the holder is connected to the concrete sleeper (16, 104, 148, 226, 260).

7. Rail fastening according to at least one of the preceding claims, w h e r e i n the insert (64, 200) comprises a first section receiving the shaped extension (58, 174) and a second sleeve-like section (78) extending in the concrete sleeper (16, 104, 148, 226, 260), passed through by the bolt element (82, 84) and emanating from the first section.

8. Rail fastening according to at least one of the preceding claims, w h e r e i n the first section of the insert (64) has a hollow cylinder geometry with two radial protrusions (68, 70) having a circular geometry in section.

9. Rail fastening according to at least one of the preceding claims, w h e r e i n the plate element is a ribbed plate (102) in which the holder (144) positively engages.

10. Rail fastening according to at least one of the preceding claims, w h e r e i n the plate element is an intermediate plate (149) supporting a tongue rail (100) in its root area and having a through opening (156) with a cross-section matching that of the shaped extension (58), and wherein on the bottom a spacer element (160) comprising electrically insulating material is arranged in the through opening and supports the holder (24) or its shaped extension (58).

11. Rail fastening according to at least one of the preceding claims, w h e r e i n the spacer element (160) has an outer and inner wall (162, 164) following a circular geometry in section and connected by radial webs (166).

12. Rail fastening according to at least one of the preceding claims, w h e r e i n the holder (170, 232) is arranged between two rails (10, 100; 222, 224) running directly next to one another, wherein receptacles for two clips (184, 186) emanate from the holder, wherein the clips rest on a plate element (188, 242) adjustable relative to the holder, and wherein the plate element in turn rests on the rail feet (18, 154) of the rails.

13. Rail fastening according to at least one of the preceding claims, w h e r e i n two pairs of shoulders (176, 178, 180, 182, 234, 236, 238, 240) emanate from the holder (142, 232), wherein a clip (184, 186) emanates from each pair

of shoulders and wherein the plate element (188, 242) resting on the rail feet runs between the two pairs of shoulders.

14. Rail fastening according to at least one of the preceding claims,
w h e r e i n the plate element (188, 242) between the rails (10, 100, 222, 224) running directly next to one another and resting on their feet has supporting surfaces with an inclination matching inclination of the rail feet (18, 154, 258) in areas which usually support clips.

15. Rail fastening according to at least one of the preceding claims,
w h e r e i n the holder (170, 232) arranged between the rails (10, 100, 222, 224) running directly next to one another has a base section (172) of block-like geometry and wherein the shaped extension (174) emanating from the bottom surface of said base section has a geometry rectangular in section with rounded corners that positively engages in the insert (200).

16. Rail fastening according to Claim 15,
w h e r e i n the insert (200) comprises a plane section (202) merging flush or almost flush with the surface (198) of the concrete sleeper (148, 226) and whose surface extent is greater than that of the base section (172) of the holder (70) and wherein a recessed area (208) positively receiving the shaped extension (174) of the holder is in the centre of the outer section, from which recessed area emanates a sleeve-like section (212) passed through by the bolt element (214).

17. Rail fastening according to Claim 16,
w h e r e i n the outer section (202) of the insert (200) has on the underside radial reinforcing ribs (204, 206).

18. Rail fastening according to at least one of the preceding claims,
w h e r e i n the insert (64, 116, 158, 200) is integrally cast in the concrete sleeper (16, 104, 148, 226, 260).

19. Rail fastening according to at least one of the preceding claims,
w h e r e i n the insert (64, 116, 158, 200) comprises electrically insulating material.

20. Arrangement for fastening of rails (10, 100, 222, 224, 252) having rail feet (18, 154, 258) and resting on concrete sleepers (16, 104, 148, 226, 260) in the area of a points or crossing comprising several clips (20, 22, 144, 184, 186) emanating from holders

(24, 26, 142, 170, 232) with at least first and second legs, where the first legs (28, 30) of the clips are fixed inside one or more receptacles such as shoulders (42, 44) or channels (52, 54) by the respective holders and the second legs (36, 38, 40) of at least some of the clips rest on the rail feet,

w h e r e i n first holders (24, 26) are positively received by first inserts (64) integrally cast in concrete sleepers (16, 148, 226, 260) and detachably connected to the concrete sleepers by bolt elements (82, 84), wherein second holders (142) are positively arranged in recesses (146) of plate elements (102) arranged on concrete sleepers (104) and are detachably connected to the concrete sleeper by bolt elements (84) and/or that third holders (24) are positively arranged in through openings (156) provided in intermediate plates (149) supporting heel area of a tongue rail (100), supported on the bottom by spacer elements (160) and detachably connected to concrete sleepers using bolt elements (82), and wherein fourth holders (170, 232) are each arranged between rails (10, 100; 222, 224) running directly next to one another, wherein the fourth holders are positively received by second inserts (200) integrally cast in concrete sleepers (148, 226) and detachably connected to the concrete sleepers using bolt elements (214), and wherein two clips (184, 186) emanate from every fourth holder and each rest on a second intermediate plate (188, 242) arranged movable relative to the fourth holder and in turn rest on the rail feet (18, 48, 154, 228, 230) running directly next to one another.

21. Arrangement according to Claim 20,

w h e r e i n the first, second and third holder (24, 26, 142) are of identical design.

22. Arrangement according to Claim 20,

w h e r e i n at least one first holder (24, 26) emanates from each concrete sleeper (16, 104, 148, 226, 260).